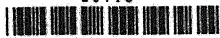


# Demand – Supply Scenario of the Indian Sugar Industry

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**DEMAND - SUPPLY SCENARIO OF THE  
INDIAN SUGAR INDUSTRY**

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## **DEMAND - SUPPLY SCENARIO OF THE INDIAN SUGAR INDUSTRY**

Dr. R.C. Tyagi

### **Introduction**

Sugar Industry is one of the major industries in India. Since it is an agro-based industry, located primarily in rural areas, it provides an effective instrument for carrying progressive trends in the country-side. This industry affects agricultural sector fundamentally and also affect all the persons in rural areas through backward and forward linkages significantly. As a matter of fact, during the colonial rule this industry was promoted with a view to commercializing agriculture so that the peripheral area would be linked with urban market through money -- commodity relations. Hence, the limited purpose to promote sugar industry could not take a comprehensive view for its development and the administration of the British Merchant capital retained its forced commercial character leading to a dual structure of sugar production - capitalist and pre-capitalist. Moreover, the forces of trade and commerce could not make this industry more than a commercial enterprise being a subject to the role of the market forces. In course of time, sugar became one of the major items for mass consumption. But the commercial character of this industry being a subject of market forces made its production fluctuating in character.



The consumption of sugar is likely to grow at a faster pace due to improvement in living standards, change in dietary habits, increasing purchasing power, etc. and the supply side which is production, is not increasing at desirable rate due to certain reasons like - sickness in sugar mills, diversion of sugarcane from mill to other processing sectors and mis-management in the industry. Therefore, this paper examines the trend of sugar production and consumption in the country and also assess the future requirement of the sugar. Also, an attempt has been made to show as to how some balance between consumption and production of sugar can be made to avoid sugar crisis in the future.

### Methodology

The present study is based on the data and other relevant informations collected from the Indian Sugar Year Book, which is annually published by the Indian Sugar Mills Association (ISMA). All the data concerning production and consumption etc. of Sugar, Gur and Khandsari are obtained from the same source till 1989-90. The Year Book has also given an estimated year-wise population till 1989-90. After looking into the time series data over a period of last three decades, since 1960, the following Compound Growth Rate formula is applied for projecting the production and



consumption of sugar by the end of 2014-15; assuming other things as constant:

$$r = \left[ \text{Anti Log} \left( \frac{\text{Log Pt} - \text{Log Po}}{t} \right) - 1 \right] \times 100$$

where :

$$\text{Log Pt} = \text{Log } X_1 + \text{Log } X_2 + \text{Log } X_n$$

$$\text{Log Po} = n \times \text{Log } X_1$$

$$t = n(n-1)/2$$

$$r = \text{Compound Growth Rate}$$

OR

$$\text{Growth Rate} = \frac{\text{Rate (end value, initial value, No. of years)} \times 100}{\text{No. of years}}$$

### Trend of Sugar Production and Consumption in India

Since Independence there has been an overall increasing trend in sugar production in India but like other agro-industries, this industry has been subject to wide and sometimes violent fluctuations. One of the main reasons for this, is that the raw material of this industry (sugarcane) displayed large inter year fluctuations mainly on account of weather, sometimes, it suffers from drought and sometimes from floods and heavy rains. Other factors responsible for these fluctuations are Government policies, prices, market conditions, etc. It is, therefore, seen that an upward trend in growth of production has not been very smooth. It is clear from Table 1 that overall trend of production is rising

on. During the period 1960-61 to 1989-90 the production of sugar in the country has increased at a rate of 4.792 per cent per annum. Table 1 also indicates that the production trend of sugar is extremely irregular. For example in 1977-78 the total sugar production of India was 64.57 lakh tonnes which fell to an abnormally low figure of 38.58 lakh tonnes in 1979-80 and again rose to a record level of 84.36 lakh tonnes in 1981-82 and then came down to 59.17 lakh tonnes in 1983-84 and again increased to 61.43 lakh tonnes in 1984-85. The co-efficient of variation in sugar production during the period 1970-71 to 1988-89 works out at 32.30.

Not only the sugar production but the consumption too has been rising and in fact the rate of rise in consumption has been almost consistently more than the rate of rise in production. Another most important thing to note is whereas the production has a fluctuating trend, the consumption of sugar is generally on the rise, persistently imbalance between production and consumption of sugar calls for policies which would stabilise the availability of sugar on the one hand and its domestic and export demand on the other. As a consequence of higher increase in domestic consumption over production the surplus left for export has registered a declining trend. In recent years, it has turned out to be negative, necessitating imports to cover the deficits. This is happening due to the consumption rate, which has been increasing steadily in our country (Table 1).

Table 1 : Production and Consumption of Sugar, Gur and Khandsari in India

Sugar Season	Popula- tion (Million)	Produ- ction (Lakh Tonnes)	Consumption (Lakh Tonnes)		Per Capita Consumption (Kgs) per annum		Total Consum- ption (Kg) per annum
			Sugar	Gur & Khand- sari	Sugar	Gur & Khand- sari	
1960-61	439	30.28	21.27	66.87	4.8	15.2	20.0
1965-66	489	35.72	28.10	69.11	5.7	14.1	19.8
1970-71	546	37.40	40.27	74.73	7.4	13.6	21.0
1975-76	609	42.62	37.56	83.67	6.1	13.7	19.8
1976-77	621	48.40	36.87	88.41	6.0	14.2	20.2
1977-78	633	64.57	44.90	90.88	7.1	14.4	21.5
1978-79	646	58.42	62.09	75.96	9.6	11.8	21.4
1979-80	669	38.58	52.32	75.48	7.8	13.3	21.1
1980-81	685	51.47	49.70	86.33	7.3	12.6	19.9
1981-82	700	84.36	57.43	76.11	8.1	10.9	19.0
1982-83	710	82.30	64.81	85.54	9.0	12.1	21.1
1983-84	723	59.17	75.55	94.11	10.4	11.3	21.7
1984-85	737	61.43	80.93	89.82	11.0	12.2	23.2
1985-86	751	70.16	82.72	82.88	11.0	11.0	22.0
1986-87	765	85.01	86.87	82.00	11.4	10.7	22.1
1987-88	780	91.10	93.85	79.30	12.0	10.2	22.2
1988-89	795	87.52	99.36	88.34	11.81	11.11	22.9
1989-90	815	100.05	103.45	90.00	12.66	10.32	22.9
CGR*	2.169	4.792	4.974		2.772	0.565	

Source : (ISMA), Indian Sugar Year Book (1988-89 & 1989-90)

\* Compound Growth Rate has been calculated with the help of the time series data since 1960 to 1990.



### The Changing Pattern of Demand

The growth in demand in the domestic market did not pose any problem until the 1980s as the output was in excess of internal off-take, excepting the years when there was a sharp decline in production due to the drought or other factors. No rational explanation is available about slow growth in consumption in earlier years, even though, sugar was distributed on controlled basis for most of the time. Perhaps, this was also a contributory factor because of inadequate availability in rural areas. The off-take increased to 37.56 lakh tonnes in 1976-77 from 11 lakh tonnes in 1950-51 but there was a spurt to 44.90 lakh tonnes in 1977-78 following decontrol in August 1978. With cheaper and free supplies, demand increased sharply to 62.09 lakh tonnes in 1978-79. There was a dip in the subsequent two years to 49.70 lakh tonnes in 1980-81 (Table 2).

After 1980-81, however, there had been no looking back and the despatches from factories in 1985-86 were at an all time high 82.72 lakh tonnes, and in 1989-90 were 103.45 lakh tonnes, while marginal imports were made in earlier years to overcome small shortage. It was only in 1984 to 1986, that it became necessary to import on a large scale to meet internal demand because of a drop in production, even after utilizing about 30 lakh tonnes of the massive stock of 45.87 lakh tonnes at the end of 1982-83. The development during 1981-88 suggest that the consumption of refined sugar was

Table 2 : Consumption, Export, Import and Availability of Sugar in India

(Figures in Lakh tonnes)

Season	Off-take for		Import	Availability	Opening stock
	Internal Consumption	Export			
1960-61	21.27	3.03	-	36.33	6.05
1965-66	28.10	4.30	-	42.00	46.72
1970-71	40.27	3.90	-	58.24	20.84
1975-76	36.87	9.50	-	54.69	12.07
1976-77	37.56	3.41	-	56.70	28.32
1977-78	44.90	2.53	-	80.32	15.75
1978-79	62.09	8.36	-	91.31	32.89
1979-80	52.32	2.30	1.63	61.07	20.89
1980-81	49.70	0.60	1.53	59.45	6.45
1981-82	57.43	4.15	0.77	94.28	9.15
1982-83	64.81	4.25	-	115.00	32.70
1983-84	75.55	6.59	0.94	105.98	45.87
1984-85	80.93	0.32	11.87	97.04	23.74
1985-86	82.72	0.36	16.19	102.14	15.79
1986-87	86.87	0.22	9.53	113.60	19.06
1987-88	93.85	0.18	9.71	118.34	26.53
1988-89	99.36	0.18	-	111.83	24.31
1989-90	103.45	0.23	2.42	124.59	12.29

Source : (ISMA), Indian Sugar Year Book (1988-89 and 1989-90).

rising steadily even with a concurrent growth in off-take of Gur and Khandsari. Thus may even be a slower rise in the intake of Gur through the consumption from Khandsari producers may remain keen. If the organised sector is not able to secure its cane requirements at price which will satisfy the growers and which can also be afforded by it. The dependence on imports, because of rising demand, can be avoided only if the earlier fluctuations in output do not recur.

It is pertinent to point out here that there was not net dependence on imports in earlier years. In fact, exports have had to be compulsorily effected to avoid an accumulation of stock. There were as high as 9.5 lakh tonnes in 1975-76 and during the period of world boom in sugar prices during 1974-76 foreign exchange earnings of as much as Rs.800 crores could be secured through sugar exports. In other years, the shipments ranged between 1.0 to 6.5 lakh tonnes, while imports were only 3.16 lakh tonnes during 1973-81, when production was affected by drought (Table 2).

### Forecasts About the Industry: Perspective and Strategy

The consumption of sugar is likely to grow at a faster pace than its production in the future. It is now necessary to calculate the sugar production, its demand and consumption for the future, keeping in view, the rise in population, the



growth in GDP and demand elasticity for sugar, so that the gap between production and consumption could be filled by increasing the productivity of existing sugar mills and the production capacity of white sugar. The estimation of demand for sugar and sugar production capacity and related factors with this industry like future per capita annual requirement for the consumption of sugar, total sugar production, etc. are desirable not only from the point of view of academic interest but also for the policy implications. Although, their use in predicting the future may hardly be dependable but as a measure of performance during a period they have considerable significance to policy makers.

As already been mentioned that the consumption of sugar is likely to grow with a faster rate, is clear when per capita requirement of sugar is projected upto a period of 2014 to 2015 AD from 1990-91. Table 3 shows that the internal per capita consumption of sugar in our country will increase steadily as compared to Gur and Khandsari, which will remain almost unchanged and may be decline. This is happening due to the change in consumers taste and other factors like increase in income and urban effect on rural areas. This is true that the quality of mill sugar is better than that of Khandsari sugar, in taste due to the better and automatic technology used in mills but hardly difference in size and colour of crystals. The requirement per capita sugar will be more than 25 Kgs. per annum in 2014-2015 AD as consumption of sugar was 12.66 Kgs. per capita per year, in the year 1989-

90. The total requirement of sweetening agents like Sugar, Gur and Khandsari per capita will be over 36 Kgs. in 2014-15 AD, as it was 22.9 Kgs. per annum in the year 1989-90.

Table 3 . Projected Per Capita Requirement of Sugar, Gur and Khandsari in India (1990-91 to 2014-2015 AD)

Years	Estimated population (in Million)	Per Capita Estimated Demand (Kgs p.a.)		
		Sugar	Gur & khandsari	Sugar + Gur & khandsari
1	2	3	4	(3+4)
1990-91	832	13.02	10.37	23.39
1991-92	850	13.38	10.43	23.81
1992-93	868	13.75	10.49	24.24
1993-94	887	14.13	10.55	24.68
1994-95	906	14.53	10.61	25.60
1995-96	926	14.93	10.67	25.60
1996-97	946	15.34	10.73	26.07
1997-98	967	15.35	10.79	26.56
1998-99	988	16.21	10.85	27.06
1999-2000	1009	16.66	10.91	27.57
2000-01	1031	17.12	10.97	28.09
2001-02	1053	17.59	11.03	28.62
2002-03	1076	18.07	11.09	29.16
2003-04	1099	18.57	11.15	29.72
2004-05	1123	19.08	11.21	30.29
2005-06	1147	19.60	11.27	30.87
2006-07	1172	20.14	11.33	31.47
2007-08	1197	20.69	11.39	32.08
2008-09	1223	21.26	11.45	32.71
2009-10	1250	21.84	11.51	33.35
2010-11	1277	22.44	11.57	34.01
2011-12	1305	23.06	11.63	34.69
2012-13	1333	23.69	11.69	35.38
2013-14	1362	24.34	11.75	36.09
2014-15	1392	25.01	11.81	36.82

As far as my estimations are concerned the trends sugar production and sugar consumption in the future, in India, has shown in the Table 4. Thus, this table is indicative of the fact that there will remain a gap between production and consumption of sugar in the country almost every year beginning from 1990-91 to 2014-15 AD, necessitating some far-reaching intensive measures on the part of the Central and State Governments and the sugar complex to bridge the gap.

Table 4 : Projected Sugar Production and Consumption in India (1990-91 to 2014-15 AD)

Years	Estimated population (in Million)	Sugar Production (Lakh tonnes)	Sugar Consumption (Lakh tonnes)
1990-91	832	104.83	108.60
1991-92	850	109.85	114.01
1992-93	868	115.12	119.68
1993-94	887	120.63	125.63
1994-95	906	126.42	131.88
1995-96	926	132.47	138.44
1996-97	946	138.82	145.33
1997-98	967	145.47	152.55
1998-99	988	152.45	160.14
1999-2000	1009	159.75	168.11
2000-01	1031	167.41	176.47
2001-02	1053	175.43	185.25
2002-03	1076	183.83	194.46
2003-04	1099	192.63	204.13
2004-05	1123	201.86	214.28
2005-06	1147	211.53	224.93
2006-07	1172	221.66	236.11
2007-08	1197	232.28	247.85
2008-09	1223	243.41	260.17
2009-10	1250	255.07	273.11
2010-11	1277	267.29	286.69
2011-12	1305	280.09	300.94
2012-13	1333	293.51	315.90
2013-14	1362	307.57	331.61
2014-15	1392	322.30	348.10



For securing quick results, high priority may have to be accorded to the implementation of the expansion schemes of the efficient units in Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu, while improving the efficiency of the older units in the Uttar Pradesh with a certain of additional capacity through modernisation, expansion and new schemes.

### Need for Modernisation, Rehabilitation and Optimisation

In view of advancing technology and the importance of costs, the sugar mills have to be modernised and also helped to operate with optimal capacity. In the earlier years, many units with capacity of 400-800 tonnes daily (TCD) were established, particularly in Uttar Pradesh. Their locations were also not scientifically conceived and difficulties arose with regards to cane supply. The profitability of the industry has not been satisfactory and heavy losses have been sustained by many units because of the unimaginative controls over prices and distribution. Under the new policy formulated by the Government it is considered that the optimum capacity is 2500 tonnes per day and that the existing units should be allowed to raise their capacity to this level, where the required additional quantities of sugarcane can be assured. The capacity can be raised advantageously to 4000-5000 tonnes daily (TCD), scope for the mills concerned to have extended sugarcane cultivation.

The demand for sugar may well rise over 180 lakh tonnes by the turn of the century. So unlike in previous years, the industry has to raise its output steadily for meeting the growing demand. Also the policy regarding fixation of minimum price for sugarcane has to be pragmatic while the entire cost of cane should be taken into account, when computing the retention price. The policy of State Governments working independently of the centre, requesting sugar mills to make payments to growers at price higher than the statutory minimum and which were not taken into consideration for determining costs would have to be discontinued.

Apart from the need to secure a satisfactory return on net worth, the industry should be enabled to modernise its facilities, for minimising sugar losses, saving energy consumption and improving recovery of sugar. The resources required for modernisation should be made available in great measures, in the form of soft loans, while every encouragement should be given for raising crushing capacity initially to 1250 tonnes daily (TCD) particularly in Uttar Pradesh. Where many mills have uneconomic capacities and subsequently to 2500 tonnes daily (TCD). This was considered to be an optimum size in the mid 1980s. The Government has actually permitted the existing mills to raise their capacities to this level where it was possible for them to obtain the required sugarcane supplies and trend also to the area under the cane crop

wherever feasible. The prospects for the industry are assured and needed fund for implement in modernisation, expansion and new schemes could be found in well conceived fiscal and price policies.

The causes of the current crisis in sugar are rapid increase in the demand and instability in the production of sugarcane. The share of India in world sugarcane production is about 25 per cent. India produces more sugarcane than Brazil and Cuba taken together, though its contribution to the world cane sugar production exclusive of non-centrifugal sweeteners (Gur and Khandsari) is hardly 10 per cent. So it seems to be considerable scope for exploiting our sugarcane potential to the best advantages of the country. These are indeed redeeming features of the sugar industry.

### Conclusion and Suggestions

According to the estimations given above, the demand for sugar may increase to 138.44 lakh tonnes in the year 1995-96 and will be 176.47 lakh tonnes in 2000-2001 AD, keeping in view the rise in population, the growth in the GDP, the demand elasticity for sugar and consumers taste, etc. The total requirement of sugar for domestic consumption will be of the order of 185 lakh tonnes, and if export requirement of 10 to 15 lakh tonnes is considered it would become 200 lakh tonnes in 2001-02 AD. Further the demand of sugar would be



more than 348 lakh tonnes in the year 2014-15 AD. This demand can be fulfilled by achieving additional crushing capacity, with intensive use of existing facilities, modernizing sugar mills, improving sugarcane qualities and assure their supplies to the sugar mills. The objectives of the sugar policy should be thus, the promotion of cultivation of sugarcane, development of additional capacity and measures for improving recovery and reducing costs.

While we are producing sugarcane 25 per cent of the total produce of the world, we should be optimistic towards our sugar industry in future. Thus, the current all India Sugar Scenario is anything but future is bright. Efforts must be made to bridge the gap between production and consumption also to control the sugar price vis-a-vis to see a genuine profit of sugar industry and cane growers and try to avoid the situation as the consumers are to pay higher prices, while the sugar industry is reeling under heavy losses - besides, the farmers are not paid for sugar crops for months and some times for years.